CLAIMS

What is claimed is:

1. A method for determining a position of an input object for a processor-based system, said method comprising:

determining at least one angle of position for said object by moving a search beam through a search area, wherein said search beam is reflected off said object creating a location beam when said search beam is at said at least one angle of position; and

determining a distance of said object from a reference point by analyzing an interference pattern created by combining said location beam and a control beam, wherein said distance and said at least one angle of position describes said position for use by said processor based system.

2. The method of claim 1 further comprising:

tracking a motion of said object by determining said position of said object a plurality of times.

3. The method of claim 1 wherein said search beam is panned through an arc, and wherein said arc corresponds to a polar coordinate.

4. The method of claim 1 wherein said search beam is panned through at least a first arc and a second arc, wherein said first arc and second arc correspond to a first spherical coordinate and a second spherical coordinate.

5. The method of claim 1 wherein said search beam is elongated in at least one direction perpendicular to the direction of propagation, and wherein said interference pattern is analyzed to determine a second angle of position.

6. The method of claim 1 further comprising:

splitting a source beam to create said search beam and said control beam.

7. The method of claim 1 further comprising:

fitting said object with a retroreflector.

8. The method of claim 1 wherein said object is a computer input device.

9. The method of claim 8 wherein said computer input device is a computer mouse.

10. A system to determine a position for input to a processor based application, said system comprising:

a redirector that moves in at least one dimension about a fixed point;

an object for indicating a position to provide input for said application, said object operable to reflect a search beam as a location beam;

logic operable to determine at least one angle of position from an orientation of said redirector; and

logic operable to determine a distance of said object from said fixed point.

11. The system of claim 10 further comprising:

a splitter operable to split a source beam into a control beam and said search beam;

optics arranged to combine said location beam and said control beam;

a detector responsive to an interference pattern created by said combination; and

wherein said logic operable to determine distance analyzes said interference pattern to determine said distance.

12. The system of claim 10 further comprising:

logic operable for tracking motion of said object by repeatedly determining its position.

13. The system of claim 10 further comprising:

a retroreflector affixed to said object.

14. The system of claim 10 further comprising:

a reflector oriented to reflect the location beam along the same path as the control beam.

15. The system of claim 10 wherein the object is a mouse.

16. The system of claim 10, said system further comprising:

logic operable to determine a second angle of position from said orientation of said redirector, and wherein said redirector moves in a second dimension about said fixed point.

17. A system comprising:

a first optical path for directing a first beam toward at least one photo-sensor;

a second optical path for directing a second beam reflected by a movable object toward said at least one photo-sensor;

means for determining an angular coordinate of said object;

an interface for receiving data generated by said at least one photo-sensor; and

a processor operable to analyze data received via said interface and generated by said at least one sensor to identify an interference pattern, wherein a dimension of said interference pattern is measured, wherein a distance coordinate of said object is determined using said measured dimension, and wherein said angular coordinate and said distance coordinate are used to define a position of said object for input into a processor based system.

18. The system of claim 17 wherein said processor is further operable to track said position of said object over multiple time-samples, and wherein said processor is operable to control a graphical user interface object that is responsive to said processor.

19. The system of claim 17 wherein said angular coordinate is associated with said second optical path, and wherein said processor is operable to determine said position of said object using said angle and said measured dimension.

20. The system of claim 17 further comprising:

means for determining a second angular coordinate associated with said second optical path, and wherein said processor is operable to determine said position of said object in three dimensions using said first angle, said second angle, and said measured dimension.

21. The system of claim 17 further comprising:

memory operable to store the position of said object over said multiple time-samples.

22. The system of claim 17 wherein the movable object is a computer input device.

23. The system of claim 22 wherein the computer input device is a stylus.

24. A system for determining a position of an object, said system comprising:

a source of a first beam and a second beam;

a means of panning said second beam through at least one angular coordinate, wherein said second beam is reflected off of said object; and

a means of interferometrically analyzing an interference pattern created by said first beam and said second beam.

25. A system of claim 24 wherein said source is a broadband source and said interferometric means uses low-coherence interferometry.

26. A system of claim 24 wherein said source produces at least one wavelength of electromagnetic radiation.

27. The system of claim 24 wherein said source produces electromagnetic radiation within a range, wherein said range is used to establish geometric limits to said determined position.